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Virus Anatomy Another Manhattan Project Book Picks

SPECTRUM

NOVEMBER 2001

SPECIAL REPORT

Nuclear Power Gets a Second Look

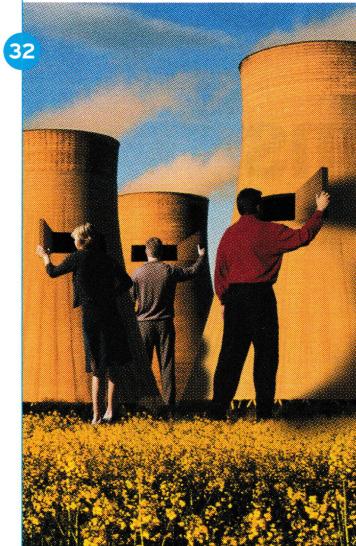


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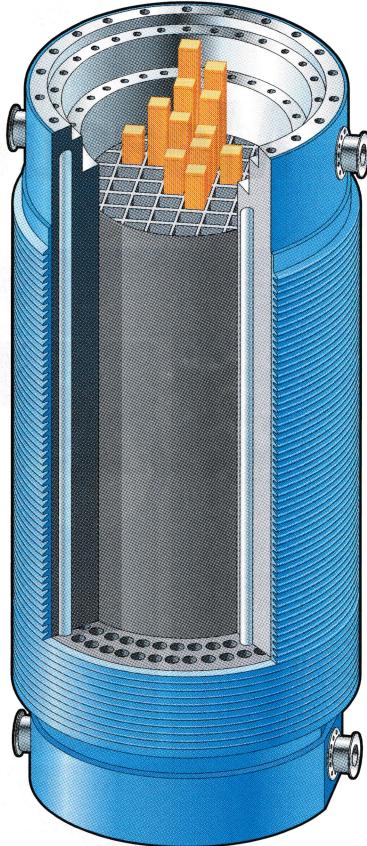
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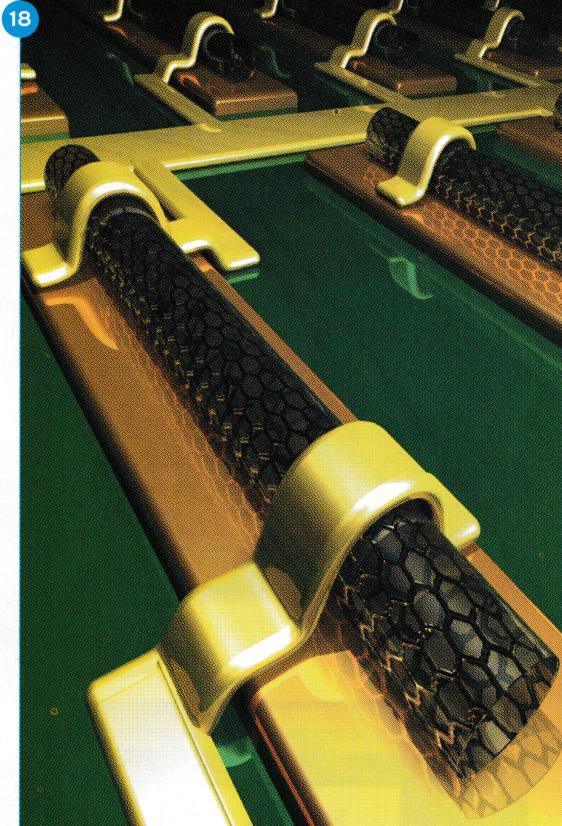
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ON THE COVER: Photo-illustration by Steven Belcher. Cooling towers photograph: FPG International

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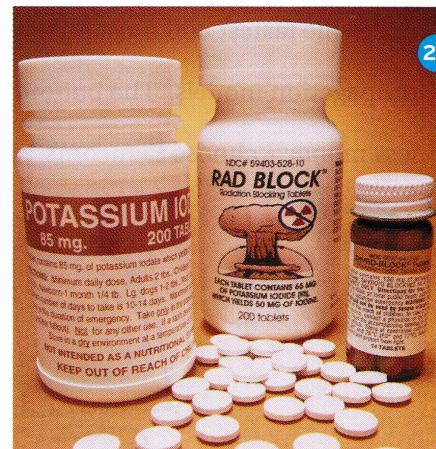
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BOOKS

Editors' Picks

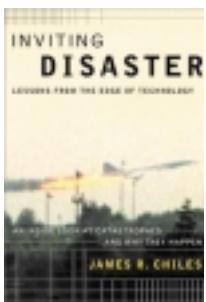
With the gift-giving season nearly upon us, *IEEE Spectrum* editors were polled for their best bets from the last 12 months of books

ENGINEERING

Inviting Disaster: Lessons from the Edge of Technology

James R. Chiles HarperBusiness, New York \$28

Usually more than one thing has gone wrong when a catastrophe affects our technologically complex world. This collection

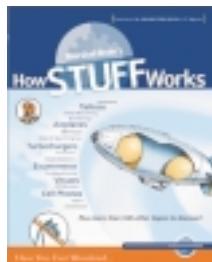


of short and usually understandable descriptions discusses the causes of such tragedies as the Challenger space shuttle disaster, the sinking of the Ocean Ranger oil-drilling rig, the Concorde crash in Paris, the faulty mirror in the Hubble telescope, the fiasco of the U.S. Navy's Mark 14 torpedo failures early in World War II, and many more. AR

How Stuff Works

Marshall Brain Hungry Minds, New York \$24.99

A good reference and a good read, *How Stuff Works* presents clear, well-illustrated explanations of how things work. Airplanes, cruise missiles, hybrid cars, batteries, file compression, digital cameras, routers, microwave ovens, sunglasses, radio-controlled toys, and more are covered. The book makes complex



ideas interesting and understandable to adults and kids alike. EAB

EXPOSING ELECTRONICS

Bernard Finn, editor Gordon & Breach Science Publishing, Newark, N.J. \$23

Electronic artifacts are preserved in collections around the world. Finn's focus is the process by which they are collected and the museums in which many of them are kept. But his book is worth the price just for the high quality of its historical images and photographs of exhibits. HG

MILITARY

Weapons in Space

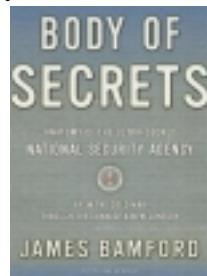
Karl Grossman, Michio Kaku Seven Stories Press, New York \$6.95

Published almost a year ago, *Weapons in Space* examines the 1967 Outer Space Treaty and the history of the Global Network against Weapons and Nuclear Power in Space. The Outer Space Treaty was created to ban space-based weapons of mass destruction and has been ratified by over 60 nations. The global network, founded in 1992, opposes the use of nuclear materials in space, even as a power source for interplanetary probes. At 80 pages, *Weapons* is no weighty legal tome but a speedy read and a useful introduction to the political backdrop to military and nuclear activity in space for the last three decades. EAB

**Body of Secrets**

James Bamford Doubleday, New York \$29.95

With a staff of 38 000, the National Security Agency not only dwarfs the Central Intelligence Agency, but is the largest and most powerful intelligence agency in the world. Bamford's detailed examination of the U.S. agency and its reliance on satellites and the Internet for surveillance lifts the veil that normally shrouds its activities. AR

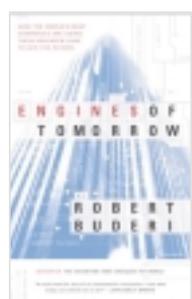


CAREER AND BUSINESS

Engines of Tomorrow: How the World's Best Companies Are Using Their Research Labs to Win the Future

Robert Buderi Simon & Schuster, New York \$27.50

Former *Business Week* technology editor Robert Buderi takes a serious look at the role corporate research plays in long-term business success. Despite a perception that such activity has been dramatically scaled back in recent years, Buderi proves the opposite is true by taking us inside facilities at nine of the biggest innovators in the United States, Europe, and Japan: IBM, Siemens, NEC, Lucent Technologies, General Electric, Hewlett-Packard, Xerox, Intel, and Microsoft. HG

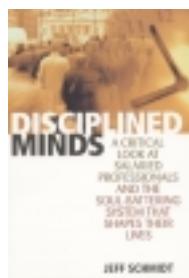


Disciplined Minds: A Critical Look at Salaried Professionals and the Soul-Battering System That Shapes Their Lives

Jeff Schmidt

Rowman & Littlefield, Lanham, Md.
\$26.95

Schmidt offers a provocative critique of how scientists, engineers, and other



JEFF SCHMIDT

professionals are groomed to fulfill a specific function in society—that of maintaining the status quo—and, in the process, end up sidelining their own goals and ideals.

The book is both well researched and highly readable. Some readers may disagree with its conclusions, but everyone will recognize its descriptions of the often wrenching choices that today's professionals must make.

JK

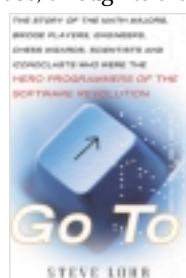
SOFTWARE

Go To: The Story of the Math Majors, Bridge Players, Engineers, Chess Wizards, Scientists and Iconoclasts Who Were the Hero Programmers of the Software Revolution

Steve Lohr

Basic Books, New York
\$27.50

Go To surveys the history of modern software, from the creation of the first successful high-level language, Fortran, and its compiler in the 1950s, through to the open source movement of today. The development of Unix and C, the rise of the graphical user-interface, and the creation of the spreadsheet are included among the events that shaped modern computing. Although some will argue with the choices of topics covered—for example, an entire chapter is devoted to Java, while no mention is made of the development of the Internet protocol—the book is full of fascinating details about an intangible creation that has had a very tangible impact on the modern world.



STEVE LOHR

TRANSPORTATION

Free Flight: From Airline Hell to a New Age of Travel

James Fallows

Public Affairs, New York \$25

When published in June, Fallows' idea of developing a network of small air taxis, to be hailed like a cab at the airport arrivals curb, was dismissed by some in the industry as somewhat far-fetched and totally impractical. But in the aftermath of 11 September, private and corporate jet use is on a hot growth streak. The plane-taxi idea may not be a winner, but the notion of using smaller jets, booked as one might a car or rail cabin, is worth exploring.

EAB

SPACE

Moon Lander

Tom Kelly

Smithsonian Institute Press,
Washington, D.C.
\$27.95

It's surprising that the man most responsible for the spindly Apollo lunar landers, Tom Kelly, hasn't told his story years before. Lucid and engaging, he tells how his team at Grumman in Bethpage, Long Island, went from paper studies to delivering hardware that would help change history. Beyond historical interest, the book has lessons for anyone involved in a large project at the cutting edge of technology.

SAC

COMMUNICATIONS

Virtuality Check:

Power Relations and Alternative Strategies in the

Information Society

François Fortier

Verso, London \$23

Information and communications technologies (ICTs), such as the Internet or videoconferencing, are often glorified as

an instrument of a more efficient economy and as the electronic enabler of participatory democracy. Fortier thinks differently. He believes that corporations actually nurtured them as a means of political and economic control. In *Virtuality Check*, he explores the ways in which the technologies are used to subjugate workers, manipulate the consumer, and extend media monopolies, while leaving just enough room for the Slashdots and Alternets of the world to weave together some feeble resistance.

HG

SCIENCE

Emergence: The Connected Lives of Ants, Brains, Cities, and Software

Steven Johnson

Scribner, New York \$25

When his online magazine *Feed* went belly up last year, editor Steven Johnson had a lot of extra time on his hands. The devil made work for them: *Emergence*, his followup on 1997's *Interface Culture*. *Emergence* explores the various forms of interconnectivity as it has evolved over the years, from ants that organize themselves to act as a single entity to computer programs that produce their own software offspring.

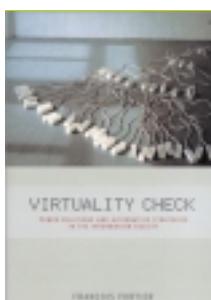
HG

The Book of Nothing: Vacuums, Voids, and the Latest Ideas About the Origins of the Universe

John D. Barrow

Pantheon Books, New York \$27.50

Part history, part modern cosmology, and part humor, this book delves into the understanding of Nothingness, both mathematical and physical. From the



VIRTUALITY CHECK
TOOL INNOVATION AND AUTOMATION STRATEGIES IN THE INFORMATION SOCIETY

François Fortier